is entirely different from that where the cord condition is due to some disease.

As a result of the sudden complete bladder paralysis produced by an injured cord, infection occurs easily and for that reason catheterization should not be performed. There may be acute distention for a few days, causing great distress to the patient, but in time the automatic bladder will develop: the patient will be quite comfortable and no infection of the urinary tract will result.

Since it is the ascending urinary infection which ultimately proves fatal, no instrumentation whatsoever should be performed upon a non-infected bladder.

On the other hand, if the disease in the cord is amenable to treatment, we should regard the bladder condition as a secondary one which will improve with the proper treatment after the primary lesion has been removed. In such cases the aim should be to keep the bladder clean and to retain its tone. If there is infection present the patient should be catheterized several times a week, the bladder should be washed with some antiseptic solution, and then some silver salt should be instilled. Urotropin given at intervals is of benefit in cases having large amounts of residual urine.

Muscle tone can be increased by instructing the patient to empty his bladder as completely as possible and to start and stop the stream at frequent intervals while voiding in order to strengthen those muscles which are not paralyzed.

This treatment has been of benefit in our patient. The nocturia and bed wetting have stopped entirely and the bladder urine shows very little pus. The residual is not much less, but urination is performed at the same hour every day, and in this manner no discomfort is experienced.

CONCLUSIONS

From a study of the case presented here and a review of the literature we have reached these conclusions:

1. In the early stages of poliomyelitis acute retention is sometimes a complicating factor.

2. Gross changes in the urinary tract may occur in chronic poliomyelitis which will give rise to the typical findings characteristic of spinal-cord bladders.

1195 Bush Street.

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OCULAR MELANOSIS—ITS SURGICAL AND RADIUM ASPECTS*

CASE REPORT

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AND
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MRS. H———, a seamstress by occupation, 56 years old when she first consulted us, February 1, 1923.

History—She tells us that since about the age of 24 she had noticed a black spot on the white of her right eye. This spot had the peculiarity that it would occasionally disappear only to reappear again possibly a little larger in size. These changes would take place without any treatment whatever.

Her family history, personal history, blood examinations, urine and all the other antecedents were negative. She was a well nourished, healthy person.

Condition When First Seen—On the superoexterior quadrant of the right eye and encroaching on the corneal margin there was a tumefaction of the conjunctiva of about 6x4x3 mm. with possible attachments to Tenons capsule and the sclera.

The growth was highly pigmented and somewhat movable.

All of the conjunctiva, both bulbar and palpebral, was so highly pigmented that this pigment could be easily rubbed off with a bit of gauze or cotton.

The cornea, refractive media and the fundus were normal.

Refraction as follows:

R + 50 C. ax. 135° 20/20
L + 75 S. + 25 C. ax. 130° 20/20

TREATMENT

Under local anesthesia this growth was removed, the conjunctiva undermined to procure sliding flaps, and sutures were applied.

Shortly after this a very considerable portion of the pigment of the conjunctiva had disappeared.

Recurrence—It was not long before a secondary growth made its appearance, this time at the lower cul-de-sac.

During the development of this second growth the universal increase of pigment about the conjunctiva seemed to be in direct ratio to the extent and duration of the growth.

This growth was likewise extirpated only to recur once more in the immediate vicinity.

We felt at the time that as each extirpation entailed the removal of a considerable portion of the conjunctiva, that a repetition of this procedure would produce a vexing entropion through cicatrical contraction.

The patient did not return to us for a considerable period of time after the second removal of the growth. When she eventually returned, February, 1926, the condition of the eye was worse than ever; not only was there a recurrence of the growth at the lower cul-de-sac, but the pigmentation of the

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whole conjunctiva was extremely marked and active and in addition to this there was also quite a considerable mucoid secretion and an inflamed appearance of the whole eye. The vision, however, was not materially reduced, as the cornea remained transparent.

We decided to follow the next surgical procedure with the application of radium. It was thought advisable to have further counsel on this matter, and a prominent skin specialist, consulted by the patient, advised an immediate removal of the eye, with special emphasis on the fact that the orbit should also be eviscerated and that both the lids should be removed.

Some practitioners will remember this line of treatment is not unlike the practice observed by some of the old clinicians who consider border line melanotic growths of the eye as pre-eminently dangerous because of metastases or because of further invasion of adjacent structures.

Our very early medical training taught that a melanotic growth of the choroid or ciliary body called for an immediate enucleation.

Nevertheless we felt that before undertaking so drastic a measure we should follow our program of radiation.

The growth was once more removed and radium treatment immediately begun by Doctor Rodenbaugh.

Radium Dosage—Doctor Rodenbaugh used 25 mg. of radium salts in a bare tube with no filters. The length of time for each treatment varied between seven and ten minutes, at about 2 mm. distance.

The dates of the treatments and length of time for each treatment were as follows:

RADIUM TREATMENTS

	M. G.	Time	Area
4-22-26	25—bare tube	7 min.	3 areas on lower lid
5-16-26	25—bare tube	10 min.	1 area on lower lid
6-19-26	25—bare tube	7 min.	1 area on lower lid
8-11-26	25—bare tube	10 min.	1 area on lower lid
10-22-26	25—bare tube	6 min.	1 area on lower lid
4- 1-27	25—bare tube	7 min.	1 area on lower lid

A few days after each treatment some reaction in the form of redness and lacrimation would follow, but no further discomfort. At one time the cornea lost a considerable portion of its epithelium, which, however, was restored nicely under treatment.

The appended reports of the pathologists leave no question that these growths were on the border line of malignancy and, as Doctor Ophüls very aptly expresses it, "in the case of melanomata one can never tell how vicious they are." Therefore the view that extensive surgery such as enucleation and evisceration was indicated was unquestionably justified before the advent of radium.

The last growth that appeared on the lower lid was a deep-seated infiltration which with the repeated applications of radium, assumed a globular form readily movable and apparently surrounded by connective tissue bands. This was easily removed through the conjunctiva.

Present Status—The extensive pigmentation of the conjunctiva has almost entirely disappeared; there has been no recurrence of any of the growths; the eye is quiet. There is a slight entropium and the eyelashes of the lower lid have disappeared. There are remnants of some pigment infiltration in the upper part of the cornea.

Vision and refraction as follows:

R + 50 S. + 1 C. 145° 20/20
L + 75 C. ax. 130° 20/20

Conclusions—1. In view of the results obtained as well as those of other recorded cases, it does not now seem necessary or advisable to use extreme measures such as enucleation or orbital evisceration, in the presence of border line or even malignant growths of the conjunctiva or cornea or even of the interior of the eye.

2. Where growths are accessible they should first be surgically removed, followed by immediate radium applications.

3. Whenever growths show tendencies toward recurrence, irrespective of whether they are proven pathologically malignant or not, radium treatment should be given after removal.

4. Radium applications over the cornea are liable to produce exfoliation of the epithelium with more or less extensive ulcerations which, however, disappear after treatment.

5. We have then in radium, apparently, an invaluable therapeutic agent for safeguarding eyes which heretofore were considered hopelessly lost. This case, of course, will be followed for a considerable period of time in order to ascertain the permanence of the results so far obtained.

350 Post Street.

REPORTS OF THE PATHOLOGISTS

W. Ophüls, M. D. (Stanford University), states that it is a nonmalignant growth and his report follows:

Sections of conjunctiva show much pigment, containing star-shaped cells, in the upper layers of the connective tissue and considerable dark brown finely granular pigment in the basal cells of the epithelial covering. The upper layers of the epithelium are missing. The conjunctiva is otherwise normal. The surface epithelium is most intensely pigmented near the small tumor, which in the section measures about 2-3 mm. in diameter. It is situated in the connective tissue underneath the epithelium and consists of a delicate reticulum of connective tissue in which there are many lymphocytes and larger cells, with large protoplasmic bodies, and large vesicular nuclei. Many of the large cells are full of finely granular brown pigment. I did not find any mitoses in these large cells. Judging from the history of the tumor, it does not appear to be excessively malignant, but in the case of melanomata, one can never tell how vicious they are.

Diagnosis: Melanosis of conjunctiva; melanoma of conjunctiva.

❋

G. Y. Rusk (University of California Hospital): Microscopic examination from each of the tumor masses show essentially the same picture. Superficially there is the epithelium of the conjunctiva of normal character supported on a thin lamina of connective tissue except in a few places where the tumor comes practically to the surface. The tumor consists of a mass of fairly uniform cells of moderate size and moderate amount of cytoplasm. There is remarkably little stroma. There is some interstitial hemorrhage and occasionally thin walled vessels are seen.

The cells of the new growth not infrequently show brown pigment in their cytoplasm. This pigment is considered to be melanin and it does not give an iron reaction. Mitotic division is fairly frequent while most of the cells conform to the average, occasionally, one with a large hyperchromatic nucleolus is seen. An occasional focus of lymphocytic infiltration occurs.

Since this case on two previous occasions was examined by Doctor Ophüls I took the opportunity to show the

present tissue to him and he expressed the opinion that the present material had the appearance of a somewhat more marked grade of malignancy than that previously examined.

While the growth is, of course, recurring and extending immediately beneath the conjunctival tissue, the specimens show none of the subjacent tissue from which an idea might be had as to the invasive properties of the growth.

Diagnosis: Melanoma.

PATHOLOGICAL REPORT

The report by C. Werner reads:

Mrs. H. M. H.—Pigmented Growth from Conjunctiva: The specimen consists of an irregular brittle, dark-brown piece of tissue, of 7 mm. largest diameter.

Sections show a structureless mass of large, clear polyhedral cells (average diameter 25 micron), a small percentage of them packed with a dark-brown granular pigment, which is also found scattered profusely between the cells. The nuclei vary greatly in size and shape, the majority containing two or more coarse nucleoli. Vitotic figures are quite frequent, some fields showing 3 or 5. The cell-mass is supported merely by a network of capillaries. At the margin of the new growth are some extensive fields of small round and plasma cells. The small neoplasm presents all the characteristics of a melanotic sarcoma. Against this diagnosis might be argued the long duration (reported fourteen years). Ewing, however, mentions a case likewise occurring in the conjunctival sac, of ten years' duration.

OSSIFYING HEMATOMA*

By JAMES B. BULLITT, M. D.
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DISCUSSION *by Raymond G. Taylor, M.D., Los Angeles; Howard E. Ruggles, M.D., San Francisco; John D. Lawson, M.D., Woodland; Roscoe G. Van Nuys, M.D., Oakland.*

IN presenting this case I am not attempting an exhaustive and general review of the subject, but am considering classification on the one hand and osteogenesis on the other.

There is some question whether the case I am to present should properly be designated as ossifying hematoma, or as myositis ossificans traumatica.

CLASSIFICATION

Myositis ossificans progressiva is clearly recognized as a general disease of progressive nature, beginning usually in early life, of unknown etiology, in which all, or many, of the muscles are slowly transformed into osseus tissue. The ossified man of the side show is an expression of this disease.

The second form of myositis ossificans is classified as circumscripta, the muscular osteoma, and appears at the site of repeated slight injuries or irritations; of this the "rider's bone" is the best known example.

The third form, localized to one site in the body, while produced by more than one etiologic factor, is most commonly the result of a single, severe, closed trauma, generally a contusion or a dislocation.

The term ossifying hematoma is frequently applied to the tumor resulting from this form of trauma. Thus Baetjer and Waters refer to seventeen cases occurring in the clinic at Johns Hopkins, sixteen the result of trauma received on the football field, the seventeenth from the kick of a mule, and all classified by them as ossifying hematoma.[1]

They say: "This tumor does not belong to the tumor group, as it is inflammatory in origin. . . . We have already discussed this lesion in connection with scurvy."

They proceed: "Apparently what happens is as follows: the violent trauma evidently ruptures a blood vessel in the periosteum; the hemorrhage gradually raises the periosteum until the resulting pressure becomes greater than the blood pressure and the hemorrhage ceases. . . . In about three weeks calcium salts will be laid down in the periosteum and the hemorrhage beneath it will undergo organization with the deposit of calcium salts."

In differentiating this condition from malignant disease they say: "In hematoma, since the hemorrhage is limited by the periosteum, there is a definite, sharp calcium border, and . . . the calcium salts are more or less parallel to the shaft."

Finally, they say: "This condition must be differentiated from myositis ossificans."

Perhaps this definition of ossifying hematoma is the correct one, but certainly it would be most remarkable if Baetjer's seventeen cases, each following a single severe trauma, were all of this type.

CASES REPORTED IN LITERATURE

Noble describes these cases following a single severe trauma as myositis ossificans; singularly enough, however, he does not even refer to the condition of hemorrhage confined beneath the periosteum, although he does state that the organized blood clot is slowly transformed into cartilage and then into bone. From a limited review of this subject, the majority of writers have described these cases under the term myositis ossificans. The usual conception has been that periosteum and osteogenetic cells have been carried up into the traumatized soft tissues by divided and retracted muscle fibres, where the blood clot has served as a nidus for the subsequent bone formation.

Noble[2] makes this point, in discussing differentiation from sarcoma, that the bony mass is at first separated from the bone shaft from which it has been derived, the x-ray showing a line of light separating the old and the new bone. Later attachment is secondary and accidental.

In the *A. M. A. Journal* for December 4, 1926, Stone reports six cases, under the term ossifying hematoma, all occurring in young athletes and all the result of a single severe trauma. He apparently recognizes that some confusion exists between ossifying hematoma and myositis ossificans traumatica, but considers his cases properly characterized as ossifying hematoma, because "they were all under the periosteum," that is, all the bony masses removed were covered by periosteum. His conception appears to be that, as result of severe trauma, there is bleeding next the bone, that the periosteum is pushed up and

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